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By Rodney Dietert
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Zen-ing Your Research

Or how to add some introspection to the scientific research model.

You may have heard about the latest trend in higher education called flipping the classroom[1,2]. This is where non-classroom time is used to electronically deliver didactic lecture content and actual classroom time is used for a more constructive homework experience. It is a useful way to shake up otherwise stale models of when, where, and how we learn, and the students generally respond well to the breaking of a century-old regimen.

But have you heard of something analogous to flipping the classroom in the context of your research? The idea of flipping your research laboratory might be alternatively titled, Zen-ing Your Research (meditatively turning the eye inward). The idea is to reverse the trend of years of academic training in which young scientists are led to believe that their research futures are intrinsically—and linearly—linked to time spent at the lab bench, and that their best ideas will come only through more hours spent at the lab bench staring, with ever- increasing focus, at the data.

If you doubt the effect of years of such academic training, you can take a measure of your own body's flexibility by reading out loud these two research productivity-oriented statements.

Spend more time in the lab, see more results.
Spend less time in the lab, see more results.

For some, the statements are equally true and comfortable. But for many, reading the second statement produces a discomfort in the body (e.g., increased body tension or a slightly unsettled feeling). But is it really useful for you to restrict your research productivity to one physical location (e.g., at the lab bench)?

With such traditional training, life and career can become partitioned or polarized into: 1) doing research and; 2) not doing research. As is described in our recent book, Science Sifting3, prepared for a Cornell University course, Tools for a Lifelong Career in Research, the history of scientific breakthroughs tells us otherwise. In fact, we should strive for seamlessness where both introspection and inspection go hand-in-hand. For example, Alexander Fleming's discovery of penicillin came on his first day back from a month-long vacation in the country4. Richard Feynman's Nobel Prize-winning Zobservation was at lunchtime watching Cornell students at play5, and Barbara McClintock's inward knowing of her maize plants and their "jumping genes" flowed from her frequent reflective gazing sessions on a hillside where she got to know her plants6, an activity that mystified her professors. These are examples of seamless, rather than polarized, "research."

Value-Added Tools
To flip research training, we recently began to teach budding researchers at Cornell University and elsewhere value-added tools for deepening their self-awareness (the inward gaze) and applying those tools to their science careers7. Not surprisingly, this meant introducing subjects far removed from the traditional academic science curriculum: micro-meditation, getting information from within, sleep-based problem solving, embodied cognition, use of play and role playing, lateral thinking exercises, synchronicities, language selection, and effective use of music, dance, and other hobbies and activities. Of course, all of these tools are designed to allow research inspiration to strike at any time and in any place. Being open to and even anticipating 24/7 scientific creativity is the ultimate goal. If your best research ideas were to come to you while fly fishing, knitting, riding a bike, waking from sleep, or playing with your child, is that really a problem? Seamless inspiration where work and play feed each other is not a bad path to set as a science researcher.

Along with the duality of teaching both traditional and flipped research preparation, we offer researchers another useful duality: training in how to be passionate about your research and at the same time, becoming a neutral, dispassionate, observer of it. For example, role playing to take on the part of an alien inter-planetary observer who is taking a look at and reporting on the research for the first time can produce insights that are not easily reached while being deeply embedded in one's personal research. Caring about the research is useful but so is taking a cold, hard, fresh look at it. After all, it might save civilization (or at least an alien one).

Citations

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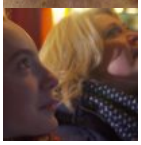
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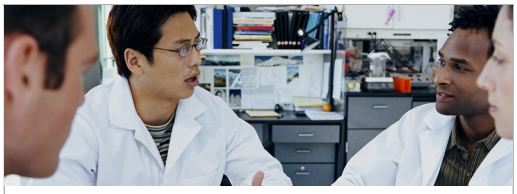

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